

Water Resources Conservation for Sustainable Agricultural Development

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1. INTRODUCTION

1.1. Water resources consumption

Increase of population and insufficient water resources has led to environmental pollution has reached substantial levels with use of synthetic and chemical inputs as a result of the increase in production. Decreasing available water resources brings on a serious water shortage problem. All living things are negative affected by the environmental pollution. The loss of species in nature, instead of use of biological control use chemical control, the hormones to increase food production have a very negative effect on ecology. The main reason for environmental pollution and degradation of the natural balance in ecosystem, consumption increased rapidly due to increasing population and increased use of fossil proliferation of products.

1.2. Water resources conservation

One of the most important aim of sustainable agriculture and rural development is to protect and conserve the capacity of the natural resource base to continue to provide production, environmental and cultural services.

Turkey Land and Water Resources

LAND RESOURCES

	Mha (millionhectares)	
Arable	Land :	28.05
Irrigable	Land :	25.75
RainfedAgriculture	:	17.25
EconomicallyIrrigable	:	8.50
PresentlyIrrigated	: 4.90	

Turkey's total

land area is 78 Mha. Almost one third of this, 28 Mha, can be classified as cultivable land. Recent studies indicate that an area of about 8.5 million ha is economically irrigable under the available technology. Until now, an area of about 2.8 million ha has been equipped with irrigation infrastructures by DSI.

Water Resources

Mean Precipitation	643 mm/m ²
Turkey's Surface Area	780,000 km ²
Annual Water Resources Potential Bm ³ (billion m ³)	
A Precipitation Volume	501
B Evaporation	274
C Leakage into Groundwater	69
D Springs Feeding Surface Water	28
E Surface Water from Neighboring Countries	7
F = A - B - C + D + E	
F Total Surface Runoff (gross)	193
G Exploitable Surface Runoff	98
H Groundwater Safe Yield	14
I = G + H	
I Total Potential (net)	112

The total water volume in the world amounts to 1.4 billion km³, 97.5% of which is saline water in the oceans and seas, 2.5% of which is freshwater in the rivers and lakes. Due to the fact that 90% of

freshwater exists in the South Pole and North Pole, human beings have very limited readily exploitable freshwater resources.

Annual mean precipitation in Turkey is 643 mm, which corresponds to 501 Bm³ (billion m³) of annual water volume in the country. A volume of 274 Bm³ water evaporates from water bodies and soil to atmosphere. 69 Bm³ of volume of water leaks into groundwater, whereas 28 Bm³ is retrieved by springs from groundwater contributing to surface water. Also, there are 7 billion m³ volume of water coming from neighboring countries. Thus, total annual surface runoff amounts to a volume of 193 Bm³ of water.

Turkey is not a rich country in terms of existing water potential. Turkey is a water stress country according to annual volume of water available per capita. The annual exploitable amount of water has recently been approximately 1,500 m³ per capita.

Development of Irrigation, Hydropower, and Water Supply Sectors in Turkey

	IN OPERATION AS OF 2005	ULTIMATE GOALS BY 2030	EACH SECTOR'S DEVELOPMENT RATES
DEVELOPMENT OF IRRIGATION	4.9 million ha	8.5 million ha	58%
DEVELOPMENT OF HYDROELECTRIC ENERGY	45.3 billion kWh	127.3 billion kWh	36%
DEVELOPMENT OF WATER SUPPLY FOR DOMESTIC AND INDUSTRIAL USE	10.5 billion m ³	38.5 billion m ³	27%

1.3. Orientation to ecotourism

People turned to ecotourism areas because of environmental pollution, increase in population, global warming. Ecotourism increased because of people move away from city life, increased consumption of products of agricultural origin and increase of environmental pollution. Because of reduction of water resources, production activities also reduced. Difficulties which are encountered in production activities because of water resources are deficit in our country. Decreasing available water resources brings a serious water shortage problem. In order to deal with this problem, the studies for the efficient use of irrigation water by providing water saving gain importance. Irrigation techniques have been developed for efficient use of water resources. With the effective use of water resources, both the water resources will be protected and high yield will be obtained per unit area. So, people can come to work for ecotourism activities. Thus, environment, social life, cultural environment and public health develop positive because of ecotourism. Every kind of tourism made in virgin nature is within the scope of ecotourism. The principle of "sustainability of natural environment", which is one of the two important criteria of ecotourism in these nature trips, has to be obeyed closely. The second important criterion of ecotourism is "the sustainability of

local cultures and that the people should benefit from this tourism activity". When eco-tourists make tourism activities, they can do agricultural activities. Such water resources, environmental pollution and global warming factors can provide with conservation of water quality. This also provides that effective fertilizer in agricultural areas, efficient use of pesticides and efficient use of water resources.

2.RESULT

The rich geography and natural potential of our country is a big chance for the types of nature tourism. However, if it is behaved unconsciously, the ruin of environmental values will rapidly be inevitable. Sustainable agriculture may be defined as consisting of environmentally-friendly methods of farming that allow the production of crops or livestock without damage to human or natural systems. Recently, orientation to ecotourism studyings should increase and thus, agricultural environmental and global warming problems should be solved. The use of agricultural products rather than the use of synthetic products should be increased. Not only environmental and tourism purposes and declining water resources, increase of population and in order to meet growing consumer needs should be provided in the development of ecotourism.

REFERENCES

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